

II. Remarks

A. Introduction

Reconsideration and allowance of the present application are respectfully requested. Claims 1 and 41 are independent claims and claims 1, 31, 32, and 41-43 are pending in the present application. Claims 2-30 and 33-40 have been cancelled. Claims 41-43 are added. Claims 1, 31, and 32 have been amended. No new matter has been introduced.

Support for the amendments to Claim 1 is found in the specification on page 20, lines 1-18 (table 2; example 18), and page 27, 1-21 (table 3, example 33), as well as elsewhere throughout the originally filed specification and claims. Support for new Claims 41-43 is found in the specification on page 16, lines 7-21 (table 1; example 6), as well as elsewhere throughout the originally filed specification and claims.

B. Claim Objections

Dependent Claims 29, 33, and 37 are objected for the reasons set forth in the Office Action on page 2. Applicants have cancelled Claims 29, 33, and 37, and thus, these objections are rendered moot.

C. Claim Rejections

1. Rejections of Claims 29-40 under 35 U.S.C. § 112 are Rendered Moot

Dependent Claims 29-40 are rejected under 35 U.S.C. § 112 first and second paragraphs. Applicants have cancelled Claims 29, 30 and 33-38. Therefore these rejections are rendered moot.

2. The Cited References Fail to Teach the Elements of Claims 1 and 23 and the Rejection under 35 U.S.C. § 103(a) is Traversed

Independent Claims 1 and 12, and dependent Claims 2, 3, 10, 13, 14, 21, and 29-36 are rejected under 35 U.S.C. § 103(a) as being unpatentable over GB2193972 to Csikos et al. (hereinafter "Csikos") in view of U.S. Patent No. 5,498,809 to Emert, et al.

(hereinafter “Emert”), and in further view of U.S. Patent No. 4,925,582 to Bennett, et al. (hereinafter “Bennett”).

Independent Claim 1, as amended, now recites: “butylated diphenylamine.” The Office Action cites Csikos for teaching antioxidants, but admits that Csikos fails to teach the specific antioxidants, such as butylated diphenylamine, in independent Claim 1. (*See* April 5, 2007 Office Action, Page 2). To remedy this deficiency of Csikos, the Examiner turns to Emert for teaching alkylated diphenyl amines. (*See* April 5, 2007 Office Action, Page 3). However, Emert only teaches the following diphenylamines and naphthylamines: 4-(p-toluenesulfonamido)diphenylamine; N,N'-dimethyl-N,N'-di-sec-butyl-p-phenylenediamine diphenylamine; 4-isopropoxydiphenylamine; octylated diphenylamine; mixture of mono- and dialkylated tert-butyl-tert-octyldiphenylamines; 4-alkylphenyl-1-alkyl-2-naphthylamines; N-phenyl-1-naphthylamine; and N-phenyl-2-naphthylamine. None of these antioxidants are recited in Independent Claim 1, as amended. Bennett is only offered for teaching a biocide and does not disclose any diphenylamine. Therefore, Csikos, Emert and Bennett cannot teach every element of Independent Claim 1 and Independent Claim 1 is patentable over these references.

Independent Claims 1 and 12, and dependent Claims 2, 3, 10, 11, 13, 14, 21 and 22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Csikos, Emert, and in further view of U.S. Patent No. 5,981,632 to Fields (hereinafter “Fields”).

Independent Claim 1, as amended, now recites: “butylated diphenylamine.” Again, the Office Action admits that Csikos fails to teach the specific antioxidants recited in Independent Claim 1, and allegedly remedies this deficiency by relying on Emert for teaching diphenylamines. (*See* April 5, 2007 Office Action, Page 3). However, Emert only teaches the diphenylamines identified above, none of which are butylated octylated diphenylamine, as claimed. Fields is only offered for teaching a biocide used in an asphaltic emulsion and does not disclose diphenylamines. Therefore, Csikos, Emert and Fields cannot teach every element of Independent Claim 1 and Independent Claim 1 is patentable over these references.

Independent Claim 23 and dependent Claims 24-28 and 37-40 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Csikos, Emert, Fields, and in further view of two press releases from Crompton Corporation, dated January 7, 2003, and October 30, 2001. Independent Claim 23 has been cancelled and thus this rejection is rendered moot.

Independent Claim 23 and dependent Claims 24, 25, 27 and 37-40 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Csikos, Emert, Bennett, and in further view of U.S. Patent No. 6,348,514 to Calabrese (hereinafter "Calabrese"). Independent Claim 23 has been cancelled and thus this rejection is rendered moot.

Independent Claim 23 and dependent Claims 24 and 37-40 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Csikos, Emert, Bennett, and in further view of U.S. Patent No. 6,075,065 to Yamazaki, et al. (hereinafter "Yamazaki"). Independent Claim 23 has been cancelled and thus this rejection is rendered moot.

Independent Claim 23 and dependent Claim 24 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Csikos, Emert, Fields, and in further view of U.S. Patent No. 4,624,679 to McEntee (hereinafter "McEntee"). Independent Claim 23 has been cancelled and thus this rejection is rendered moot.

Dependent Claims 4, 5, 15, and 16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Csikos, Emert, Bennett, and in further view of two press releases from Crompton Corporation, dated January 7, 2003, and October 30, 2001. Dependent Claims 4, 5, 15, and 16 have been cancelled and thus this rejection is rendered moot.

Dependent Claims 4 and 15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Csikos, Emert, Bennett, and in further view of Calabrese. Dependent Claims 4 and 15 have been cancelled and thus this rejection is rendered moot.

Dependent Claims 8 and 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Csikos, Emert, Bennett, and in further view of Yamazaki. Dependent Claims 8 and 19 have been cancelled and thus this rejection is rendered moot.

Dependent Claims 8 and 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Csikos, Emert, Bennett, and in further view of McEntee. Dependent Claims 8 and 19 have been cancelled and thus this rejection is rendered moot.

These rejections are traversed in view of the amended claims.

Claim 1 has been amended to be commensurate in scope with the unexpected results for buylated diphenylamine identified in the specification on page 20, lines 1-18 (table 2; example 18), and page 27, 1-21 (table 3, example 33). None of the cited references provide a showing of the unexpected results for buylated diphenylamine that are recited in the claims. In particular in Table 1, example 2 contains 0.5 wt% of biocide (Triadine 3: 1,3,5-tris(2-hydroxyethyl)-S-triazine) and achieves a 14-week bacteria onset under ASTM 3946. However, when the antioxidant, butylated diphenylamine (commercially available as Naugalube 640) is added the bacteria onset is greater than 18 weeks. Example 33 show a bacteria onset of 19 weeks in table 3. Thus, it would be unexpected that an antioxidant would increase the ability of the biocide to prevent biological degradation. Similarly, when testing the antioxidant properties using a high temperature (120° C) procedure (ASTM D-2272) the bomb life for buylated diphenylamine in example 15 in table 2 is 72 minutes. When adding biocide to the buylated diphenylamine the bomb life increases to 75 minutes in table 2. Thus, it would be unexpected that an biocide would increase the ability of the antioxidant to prevent oxidation degradation.

Claim 41 has been added to be commensurate in scope with the unexpected results for nonylated diphenylamine identified in the specification on page 16, lines 7-21 (table 1; example 6). None of the cited references provide a showing of the unexpected results for nonylated diphenylamine that are recited in the claims. In particular in Table

1, example 2 contains 0.5 wt% of biocide (Triadine 3: 1,3,5-tris(2-hydroxyethyl)-S-triazine) and achieves a 14-week bacteria onset under ASTM 3946. However, when the antioxidant, nonylated diphenylamine (commercially known as Naugalube 438L) is added the bacteria onset is greater than 18 weeks. Thus, it would be unexpected that an antioxidant would increase the ability of the biocide to prevent biological degradation. Similarly, when testing the antioxidant properties using a mid temperature (95° C) procedure (ASTM D-943) the total acid number of nonylated diphenylamine when combined with the biocide is about 0.6 after aging for 312 minutes. However, nonylated diphenylamine failed the mid temperature procedure when used without a biocide, which is not surprising since aminic antioxidants, unlike phenolic antioxidants, are known to perform well at temperatures of greater than 120° C. Thus, it would be unexpected that an biocide would increase the ability of the antioxidant to prevent oxidation degradation.

Therefore independent Claims 1 and 41 are commensurate with the scope of the unexpected results and thus are patentable over the cited references.

D. Conclusion

In view of the above remarks, it is believed that this application is in condition for allowance, and a Notice thereof is respectfully requested.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 625-3536. All correspondence should continue to be directed to the below-listed address.

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